PRENTICE COMPUTER CENTRE

NEWSLETTER

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N-234   6Nov78

authorization: Director of the Centre

1.0 'REAL' MONEY CHARGING

It is to be expected that when new additional capacity becomes available, the money charging system will be subject to scrutiny. Users may remember a similar situation in 1973 when a special sub-committee was appointed by the then Computer Centre Executive Committee. On that occasion the sub-committee unanimously recommended that charging should continue and the system was saturated within three years. There are now different circumstances and the implementation of new central equipment may open up new strategies which previously were not possible. Now we are over the problem of a saturated computing system, the methods of resource allocation for computing should be reviewed. It is not my intention here to provide a detailed summary of the debate for and against a continuation of the 'real' money charging system. I do, however, wish to make some points on areas where proper debate may be inhibited because of some apparent misconceptions.

(a) The 'real' money charging system is a policy of the University not the Computer Centre. It has been in existence from the inception of the Centre in 1962 and since then two central computer systems (the GE225 and the PDP1055) have been used to capacity.

(b) The 'real' money charging system has not led to extravagant growth in the staff of the Prentice Computer Centre. The growth of staff in the PDP10 area has increased by 30% in the six years 1972 to 1978 but work volume has increased by more than four times the 1972 load. In 1977 and 1978, only two staff have been added to the establishment to cover maintenance and operation of the new computing equipment and increased workload. The major additions to staff have been to meet demands for contract programming and engineering services for this University and Griffith University. This group is self supporting and does not influence the charge rates for PDP10 users.

(c) The proportion of the University's total general recurrent funds coming to the Computer Centre is 0.7% and is the same now as it was in 1972, despite the substantial increase in computer usage. Recent figures are not available but according to figures for 1973 published by the AUC in its Sixth Report, the Australian average was 1.2%; Sydney 1.1%, Melbourne 1.2%, Monash 2.1%, Adelaide 2.6% and ANU 1.7%.

(d)   There has been a comment that costs of operation of the
       Centre could be reduced by providing more public
       facilities and thus avoid increased operator costs. We
       could not agree more. The problem is not, however, the
       'real' money charging system but a lack of
       accommodation. Our present accommodation is not
       sufficient to properly house our current central and
       public facilities. We have represented our needs and
       plight in accommodation requirements for some years
       now. The lack of funds for new buildings and the
       reluctance of present holders of space to part with any
       of it are problems beyond the scope of the Computer
       Centre. There is little point in making investments in
       new services if there is nowhere to put them.

(e)   The Centre has not ignored the problem of making the
       new computing capacity available at lower charge rates.
       In November 1977, the Centre announced reductions in
       charge rates, effective from 1.3.78, which would allow
       20% more computer time at the same dollar expenditure.
       This was a solid commitment on our part as the new
       equipment was not scheduled for delivery until the end
       of the year. In fact, users increased usage by only
       10%. Additionally, on the initiative of the Centre,
       approval was given for computer time to the value of
       $10,000 to be made available for new research projects
       or innovative teaching projects where computing time
       was the only direct resource cost. This may not be
       considered by some to be sufficient but, at least, it
       is a start.

(f)   There is some limit to the rate of growth of effective
       demand. Our major problem now is not computing
       capacity but the training and development of people to
       use it effectively in meeting the objectives of the
       University. It is easy to say one needs more computing
       capacity but it may also be fair comment that many
       departments have not investigated their specific
       requirements or the impacts on other resources that may
       be necessary.

(g)   External revenue amounting to 22% of total revenue is
       applied against operating costs and thus subsidize the
       charge rate to internal users. It is not used for
       other purposes. External users are charged at 2.7
       times the internal rate.

       It is obviously not productive to have a situation
where, on the one hand, computing capacity is available but,
on the other hand, access to it is denied to members of the
University community who have legitimate needs.

This should not mean, however, that as a consequence the 'real' money system should be replaced as deficient. It has many advantages to the University community. New strategies are needed which give the University the best of all worlds in the changed circumstances. Personally, I believe this is possible and I am currently working on strategies in consultation with others in the University. No doubt, these along with other ideas will be considered and an appropriate policy determined for the future.

In this connection, there are a number of options to be pursued. Some for example are -

(i) Implement new services which are now possible, which exploit computing resources where the addition to cost is slight relative to increased usage.

(ii) Extend the current "free" computing allocations for major teaching and research projects including allocations for the initial development of systems for support groups (e.g. Library and Administration) where there are net savings to the University, i.e. a combination of allocation and charging systems.

(iii) Fixed charges with low usage rates for some services, i.e. similar to telephone rental and call charge system.

(iv) Greater flexibility by using our float from external income to allow outstanding balances to be rolled over from year to year.

(v) Investigate the feasibility of allowing departments to make contribution of capital funds to the Centre in return for computer time to be provided over a number of years.

(vi) Somehow provide more space to implement self-service rather than operator assisted service.

(vii) Increase external usage to provide greater subsidy to internal users.

I am sure the list is not complete and the suggestions are not mutually exclusive.

I must admit my major priority this year has been to ensure that the additional equipment is installed,

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acceptance tested and brought into operation on target. It has not been a trivial task. It happens once every ten years and involves the operational viability and protection of a significant capital investment in advanced technology. Although the major part of the system was brought into operation in March this year, we are still installing equipment. For example, the disk drives necessary to allow expansion were not installed and tested until last week. We are still installing and testing additional communications equipment.

We have limited resources and, unfortunately, we cannot do everything at once. I had hoped that the immediate and significant reductions in charges earlier in the year would have provided some breathing space. The heat of the charging debate has come on a little too soon, given that our first priority has been to straighten out the technical side to ensure we can deliver the computing capacity efficiently.

It is important, I believe, that any new initiatives for resource allocation of our computing resource should be investigated carefully to ensure that they are valid as a continuing policy over the life of the equipment, and that they are consistent with the total resource allocation procedures of the University.

It should be recognized that the problem is not only one of allocation of computer resources. Although in the past the Centre was able to meet demand growth of over four times the 1972 load without any increase in the proportion of the total University's recurrent funds flowing to the Centre, we cannot expect any real increases in the rate of the total recurrent funds in the future. Thus the challenge to the Centre is to provide increased usage without additions to our costs. This we hope will be achieved by new but restricted services and efficiency improvements. Nevertheless, as a last resort, reductions in grades of service in some areas may be necessary. There is a limit, however, to how far one can go without eroding the viability of the Centre. The University is very dependent in many areas on the effective operation of the Computer Centre. The application of computing technology will continue to grow in our society at a rapid rate and this will undoubtedly be reflected in the future development of the University's teaching and research programmes.

Director
extension 2189

2.0   BUDGET 1979

The Prentice Computer Centre Budget for 1979 has been approved by the Finance Committee on the recommendation of the Prentice Computer Centre Management Committee. The following is a brief summary:

As could be expected, no real increases in costs have been budgetted for 1979. Demand in 1978 did not increase to a level consistent with reductions in charge rates. The Centre handled 10% more work for 6% less revenue. Charge rates in 1979 will be maintained at existing levels.

It was decided by the Management Committee to provide an allocation of computer time to each department of $100 to be used outside of prime shift. The allocation is primarily to assist the non-traditional users of computers with trial and practice, although it was felt that other departments would have no difficulty in making use of the allocation to allow new staff and post-graduate students to gain familiarization with the central computer system. Each staff member or post-graduate who completes a Computer Centre training course will also be allocated an amount of computer time equivalent to $20 for practice.

The Centre's card punching and verifying service has operated as a subsidized service and charge rates have not been reviewed for many years. Additionally, it was considered that the costs of providing public key punching machines could be reduced significantly by replacing them with public terminals (of more general use) and by providing facilities for direct data entry to the PDP10.

A new service allowing direct data entry to the PDP10 will be implemented as from 1.1.79. The software will be available to all users. Those wishing to use an operator to key the data will be charged at the rate of $8 per hour.

The card punching and card verifying rates for work which is not to be run on the PDP10 will be increased as follows from 1.1.79:

Card Punching - $5.40 per hour increased to $11.50 per hour.
Card Verifying - $4.30 per hour increased to $9.00 per hour.

It is envisaged that eventually the new rates will apply to work processed on the PDP10 and that the number of

rented card punch machines for public use will be reduced.
The Finance Committee approved that the date of
implementation of such changes would be left to the Prentice
Computer Centre Management Committee, having regard to the
acceptance of the new data entry service, user requirements
and phased development.

Director
extension 2189

3.0 SYSTEM PERFORMANCE

We have had intermittent faults in the memory of the
PDP1090 system which caused more crashes than we would care
to have.

The problem with intermittent faults is that they do
not normally present themselves during diagnostic procedures
or if they do, they do not hang around long enough to allow
the fault to be isolated. The procedure then is to follow
an ordered plan of module and component replacement and swap
to try to move the fault around and localize it to an area.
Unless one has good luck, this can be a lengthy procedure.
Unfortunately, as is often the case with such circumstances,
the prolonged running of diagnostic programs outside of user
hours, did not generate faults.

We have now corrected the problem. In fact,
coincidently there were two unrelated intermittent faults
which rather confused the picture in the initial stages.
There was also a problem in the PDP1055 system which caused
it to crash under heavy load conditions. This was traced to
software and has been fixed.

We apologize to users for any inconvenience. We also
would rather not have faults.

Director
extension 2189

4.0 WORD PROCESSING COURSE FOR SECRETARIES, TYPISTS

AND ADMINISTRATIVE OFFICERS

In recent years, the need to handle the production of documents and information via the computer has been increasing. The ability to produce documentation that is accurate, properly formatted and yet easy and quick to update, maintain and produce is becoming more and more important. Within the computer industry, word processing machines and text processing programs are now readily available.

RUNOFF is the text processing program available on the PDP10. This aids the preparation of memoranda and documents by automating the typesetting and layout of the text. The Centre is organizing an introductory course to RUNOFF that is aimed specifically at secretaries, typists and administrative officers, not at computer programmers.

The course will be organized so that attendees will have access to terminals and be able to practice and experiment with what they are learning. For this reason there is a limit of 20 people only for the course. The course will run for three two-hourly sessions from 9 a.m. to 11 a.m. from Monday, 4 December to Wednesday, 6 December. Interested people are asked to register with the Secretary (extension 2189) by Friday, 24 November.

Sarah Barry
extension 3941

5.0 VG DATA BASE SYSTEM

A report generating program (VGRPG) is now available to users of VG. Refer to the new `doc` files on DOC:VG.DOC. Any queries to the Program Librarian extension 3943.

6.0 SPELLING CHECKER AND CORRECTOR

The Prentice Computer Centre now has a spelling check/correction program. This program, written by Ralph Gorin of Stanford University, is supported under category C, however any major problems will be looked into. The program not only checks your spelling, but also gives you the option of interactively correcting these mistakes, writing the corrected file to disk. It is also possible to have spelling checked, with any discrepancies noted (these being output to your terminal), but with no corrections being made.

The program uses a standard dictionary of some 10,500 words. This will be updated periodically at user's requests. You may also have your own additional dictionary (.DCT) file(s). These should contain one word of not greater than 40 characters, per line, and can be created quite simply as the by-product of checking a file. The program will also use these dictionaries to check your file. This facility allows for special "jargon" dictionaries to be set up for your particular application. You may have up to 31 of these extra dictionary files, with the program requesting which, if any, you desire to use.

You may save the core image of the program when you have finished running it. This will include an updated master dictionary in the core image and leave this on your area. This, however, is not recommended for two reasons. The program is quite large (running it about 32K), and because of the additional dictionaries facility, using the system master should be quite adequate.

Full details of how to run the program are given in DOC:SPELL.DOC and the program itself is available as UTI:SPELL.EXE.

For those who may wish to check and correct RNO files, the dictionary UTI:RUNOFF.DCT has been provided. It contains a full list of RUNOFF commands and standard abbreviations.

Andrew Broughton
extension 3391

7.0 SPECIAL INTEREST GROUP ON MATHEMATICAL AND STATISTICAL

SOFTWARE

As announced in the newsletter of 17 July 1978 (N231), a special interest group, along the lines of the PDP11 Users Group one, is to be formed in the area of mathematical and statistical software. Dr. John Holt of the Department of Mathematics has kindly consented to be provisional Chairman of this group.

An inaugural meeting to adopt a constitution and elect an executive is proposed to be held.

    Date: Tuesday 21 November 1978
    Time: 2.00 pm
    Place: Room 227, Ground Floor, Commerce Building

All those who communicated their interest in the group to the Computer Centre, as well as any others who wish to participate, are invited to attend this meeting.

Enquiries concerning either the meeting or the proposed group should be directed to either:

    Dr. John Holt   (377) 3265
    Department of Mathematics
or
    Chris McGovern   (377) 3944
    Prentice Computer Centre

A copy of the draft constitution will be forwarded on request.

8.0 NEWSLETTER INDEX

The Centre has produced an index to the newsletters and to the mini-micro newsletters produced so far this year. It is intended that the index will be updated for each issue of the newsletter and when this has been done users will be notified. Both indexes exist on the HLP: directory; the index to the newsletters as NLIDX.HLP and to the mini-micro newsletters as MMIDX.HLP.

Both sets of newsletters are produced on the computer
via Runoff. The Centre will keep all future issues on its
library. Users requesting back issues that are out of print
may request these via the Program Librarian.

Geoff Vandenberg
extension 3943

9.0 A NEW MICROPROCESSOR CONTROLLER FOR THE CALCOMP-936

PLOTTER

A CalComp-906 On-line Plotter Controller has been
installed to enable the CalComp-936 Plotter to be connected
to the KL system. It will be switchable between the two
PDP-10 systems so users of both systems will benefit.

As well as having a line generating algorithm, the
controller is able to generate symbols for all printable
characters in the ASCII set. It has a communication
protocol which includes a checksum on each message thereby
reducing the number of plots that have to be repeated due to
bad transmission.

KA system users who have SAVEd (.EXE) programs should
notice only that the plot queue is shorter and turn around
is quicker. KL system users should now queue plots created
for 'PLT0' using the command "PLOT PLT000:=filename" and for
'PLT1' by "PLOT PLT100:=filename"; not to specify the
correct device could incur a certain delay. Plots
generated for the CalComp-565 (referred to as 'PLT0' in the
call to PLOTIN) are still being transferred to the KA for
plotting.

Users of either system who reload their programs with
the latest version of SYMBOL (or the routines that call
SYMBOL, such as AXIS and NUMBER) will benefit from the
controller's symbol generating capability. This version of
SYMBOL stores the characters and scaling and rotating
factors instead of the lines needed to draw the symbols.

This is quicker (cheaper) and results in a much smaller plot
file.   However the symbols are drawn in a 15*15 grid by the
controller instead of a 7*7 grid. This means that for small
symbols the optimum size is a multiple of 15 plotter steps
instead of a multiple of 7 steps. A step is 0.05mm, so a
character height of 2.1mm should be changed to 2.25mm;
2.8mm to 3.0mm and 3.5mm to 3.75mm for better results.
Characters of other sizes are of course drawn as close as
possible to the correct shape but rounding errors will cause
a   slight   distortion,   more   noticeable   with smaller
characters. Remember that these changes apply only to files
produced for 'PLT1', the CalComp-936 plotter.

Ian Burgess
extension 3944

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